

Date: Mon, 7 Nov 94 04:30:57 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@ucsd.edu>
Errors-To: Ham-Space-Errors@UCSD.Edu
Reply-To: Ham-Space@UCSD.Edu
Precedence: List
Subject: Ham-Space Digest V94 #314
To: Ham-Space

Ham-Space Digest Mon, 7 Nov 94 Volume 94 : Issue 314

Today's Topics:

A0-27 Questions
Contacting the MIR. Help!
Freqs to hear NASA commentary?
Getting started
Omnidirectional Ant's
Satellite tracking software needed
School applying for SAREX

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: Wed, 2 Nov 1994 18:32:11 GMT
From: greg@core.rose.hp.com (Greg Dolkas)
Subject: A0-27 Questions

Dave Marthouse (dmart@cnj.digex.net) wrote:

: Does anyone have any information about A0-27. I have worked this
: satellite when it was operating in amateur mode J. What is this
: used for in the commercial service? What modulation techniques are
: used. I assume that the frequencies are near the 430 and 2 meter
: amateur bands. Any information would be appreciated.

I'm confused too. I worked it a few months ago on phone, 2m up / 70cm down.
These past two weekends it seemed like they were doing packet. Are they doing
an F0-20 type of schedule (alternate phone & packet every week or so)?
With A0-21 out, I expect this bird will get much more attention.

Greg KD6KGW

Date: Wed, 2 Nov 1994 18:13:33 GMT
From: greg@core.rose.hp.com (Greg Dolkas)
Subject: Contacting the MIR. Help!

Zack Lau (KH6CP) (zlau@arrl.org) wrote:

: Gary's analysis makes sense if you are interested maximizing the
: time you can work MIR, as opposed to just working them once.
:

Sorry, Zack, but I have to agree with Gary. In my experience working RS-10 over the past few years, a simple vertical antenna works best. I use a home-brew 5/8 J-pole most of the time, with 10-30 watts. On really bad passes (close to the horizon) I switch over to a 5 element beam aimed at the horizon. In the 50+ contacts made, I've experienced a high angle dropout once or twice, when the satellite was *right* overhead (89.something degrees). Those happen very rarely, and the dropout lasted less than a minute.

The problem with working satellites is that they're like the proverbial potato chips - once you've worked them you're hooked! The best advice is to get a setup which will maximize longer term enjoyment of this aspect of the hobby.

Now, for the original question - I believe I read in SpaceNews that MIR has had some power supply problems recently. There was a statement that one of the inhabitants was only on the air occasionally over Europe, which I extrapolate to there not being any ham activity over the rest of the planet. Your antenna and radio may be working just fine, but it takes two for a QSO. Be patient; they'll get things working again on their end. In the mean time, you might try some of the other Low Earth Orbit satellites - RS-10 or AO-27 would be good candidates (for phone; I'm not up on packet sats yet).

Greg KD6KGW

Date: Sun, 6 Nov 94 09:49:04 -0500
From: darrylb@delphi.com
Subject: Freqs to hear NASA commentary?

Astronomy Ireland <ai@iol.ie> writes:

>I asked this before and got a nice reply from the people at Goddard but I
>seem to have lost the info during changeover from one PC to another.
>

>I believe the Goddard Radio Club retransmits NASA audio Shuttle link on HF

>3Mhz - 14 MHz.

>Does anyone have the exact frequencies to hand please (for STS66 Nov 3)?

>Thanks.

This info is old, but may still be good.

WA3NAN: 3.860, 7.165, 14.295, 21.395, 28.650, 147.45

W5RRR: 3.850, 7.227, 14.280, 21.350, 28.495, 147.45

W6VIO: 14.270, 21.340, 224.04

K6MF: 3.840, 7.165, 145.58

All HF is SSB.

Hope this helps. 73's

Date: Sat, 5 Nov 94 22:04:51 -0500

From: Andrew Skattebo <askattebo@delphi.com>

Subject: Getting started

Jeffery L. Stutzman <jls@capedata.iii.net> writes:

>2. Are there FM only satellites using 2m/440?

Jeffery, I'm new to the group here and new to Delphi, but I thought I could get at least a partial answer to your posting. To answer your question, yes, there are several FM satellites available for digital use. I am looking at a list put out by AMSAT.

They list UO-22, KO-23 and KO-25 as primary FM digital birds. They all run 9600 baud however and unless your radio is already wired for it internally modifications are required along with a suitable 9600 baud modem add-on to your TNC. They also require specialized software to communicate. Also, check the frequency range of your rig, the downlink for these birds is from 436.5Mhz down to 435.12Mhz your radio might not cover these.

A wealth of beginner info on the pacsats is available from AMSAT.

"The Pacsat Beginner's Guide" call AMSAT 301-608-3410. They are a non-profit international club and would be happy to help.

73, Andy KA0SNL

Date: 4 Nov 1994 12:01:35 GMT

From: plove@powerup.com.au (Paul Love)

Subject: Omnidirectional Ant's

Greetings All, I've always wanted to get involved in Amateur satellites , but the cost has always deterred me. However i've seen designs in ARRL

H/book for "turnstile" antenna's. This would allow me to "get my feet wet", but here's the question : Is there anyone out there ACTUALLY using such antenna's ? if so , could you please advice of their usefullness I don't have unrealistic expectations, I realise they won't perform like a yagi etc. but do they work , and what "birds" would I be best advised to use them on. I already have 2 metre SSb , no 70 cms yet , but if I saved on antenna's at the outset ..well 70 cms is a possibility in near future. I'm only new on the "net" , so suppose these kind of postings may be common, so sorry 'bout that :-), but thanks in advance to anyone who can give me the benefit of their experience. de vk4xd. vk4xd@vk4wia.bne.qld.aus.oc or Email plove@enterprise.powerup.com.au

Date: 3 Nov 94 20:55:38 GMT
From: kp40.117917@kodako.kodak.com (Mark Dieter)
Subject: Satellite tracking software needed

In article <Yp\$ikClgn6iJ055yn@helix.net>, gkennedy@helix.net (Geoff L. Kennedy) writes:

>
> I am looking for an MS-DOS based satellite tracking program which
> will produce a tabular prediction *text file* output for "visible"
> passes.
>
> There is one hitch.....the output, in addition to AOS/LOS times and
> Alt/Az info, *** MUST contain the ORBIT NUMBER for each pass. ***
>

InstaTrack available from AMSAT should do the trick. I cannot confirm that orbit number is available, but I would be suprised if it weren't. I don't have the phone number, but AMSAT is in Silver Springs MD. Try information.

=====
| Mark Dieter Eastman Kodak Rochester NY |
| (716)588-4639 kp40.117917@kodako.kodak.com |
=====

Date: 6 Nov 1994 15:41:04 -0600
From: william@cortex.ama.ttuhsc.edu (William Biggs)
Subject: School applying for SAREX

Hello all,

Our middle school (grades 6-8) is in the process of writing a proposal

for a SAREX contact with a future shuttle mission.

We have the necessary equipment & expertise available, as well as plenty of contacts with news media, so those parts of our proposal will be relatively easy to address.

I am working with the 6th & 7th grade science teachers, and principal to define how we will integrate aspects of amateur radio, and space science into the curriculum.

Has anyone here submitted a successful SAREX proposal? We already have fairly definite ideas on how we want to implement SAREX project at our school, but any constructive ideas on what 'works' and 'doesn't work' with middle school age kids would be useful to us. It would also help us know what the SAREX 'powers that be' would feel is important and non-important.

My EMail address is :

william@cortex.ama.ttuhsc.edu

Thanks,
William Biggs
KC5JIF

Date: Mon, 7 Nov 1994 07:06:13 GMT
From: gary@ke4zv.atl.ga.us (Gary Coffman)

References<Cypxt1.J9K@trc.amoco.com> <39cmci\$jij@quagga.ru.ac.za>,
<CyvCzJ.H3C@trc.amoco.com>
Reply-To: gary@ke4zv.atl.ga.us (Gary Coffman)
Subject: Re: Solar radio emissions on FM?

In article <CyvCzJ.H3C@trc.amoco.com> zjad49@trc.amoco.com (Joe Dellinger) writes:

> OK, here's a wild idea for people to consider:

>

> I know amateur radio enthusiasts can bounce signals off
> the moon with fairly modest antennas (meaning antennas that can fit
> in a North American's back yard), and get enough gain that they
> can *talk* real time to each other that way. Thus the signal to noise
> ratio must not be too bad.

It's not that good unless at least one of the stations involved is a "super" station. Usually, moonbouncers are excited to get a few long dashes back off the moon. The path loss is really large, on the order of 240-270 db depending on a variety of factors.

> In Geophysics there is an entire science built around using
> *weak* sources to explore. For example, "vibroseis" which has replaced
> dynamite as a seismic source for many purposes. Basically you get a
> big metal plate attached to a heavy truck and shake it up and down. It
> doesn't put out nearly as much of an impulse as dynamite does, but
> that's OK, because you can keep wiggling it for 30 seconds or even
> longer, with a known waveform. (Vibroseis was originally invented
> to allow recording in places like urban Los Angeles, where dynamite
> could not be used for obvious reasons.) The vibroseis waveform is
> designed to crosscorrelate with itself into a nice spike. (Most people
> use frequency sweeps, but others have used "Gaussian noise" with some
> success as well.) When you crosscorrelate the recorded "noise" with the
> source waveform, magically a seismic section appears that is nearly the
> same as could have been recorded with dynamite. In fact, it can be better
> because you can tune the vibroseis waveform to put more energy in
> frequency bands where you need it.

This technique can be used on radio paths too. The Lowerfer's, a group of experimenters running low power radio in the 160-190 kHz band, use a long term correlation technique to synthesize extremely narrow filters. This allows them to get remarkable results with signals that are well below the nominal noise floor of any conventional receiver. The key to making this work is to know precisely the characteristics and timing of the signal to be received. A single bit time may be 10 seconds or more, and each station uses a precise time reference that is closely synchronized with the other station's reference. This technique should be usable for moonbounce too, with allowances made for doppler and libration.

> This got some of us thinking... if an amateur can *TALK*
> real time bouncing signals off the moon, how big an antenna would you
> need to look for near-Earth asteroids, if you were willing to broadcast
> for hours or days at a time and cross correlate with a loooooonnnnnnggg
> source waveform? It seems to me some of the same sort of equipment
> developed for SETI might be able to do this. With the plummeting price
> of computer power and memory, would such an experiment be within an
> amateur radio astronomer's reach?

I think the main problem would be the unknown doppler of the target. Since the return echo will be frequency shifted an unknown, and varying, amount, the correlator will be continually slipping phase. There will be at least three sources of doppler. One will be due to the rotation of the Earth, one due to the intrinsic velocity vector of the target asteroid, and the final one due to the different heliocentric velocities of both bodies. In principle, the first can be compensated a priori, and the third can be controlled by looking at only certain orbital volumes at any given time. The intrinsic velocity for an unknown eccentric asteroid is going to be difficult to

deal with satisfactorily.

> Would there be some equivalent of the passive seismic experiments
>as well? What about using the Sun's or Jupiter's radio emissions as the
>cosmic equivalent of a thumping drill bit? Or some manmade broadcast, like
>a military early-warning radar?

That's an interesting idea. You need a precisely determinable source in order for the correlator to lock phase. I'm not sure the Sun or Jupiter would fit the criteria. Certainly, however, UHF TV sync signals would do as a strong source. They are in the range of 5 million watts ERP, and would paint the near horizon sky in a sweep controlled by the Earth's rotation. Unfortunately, because there are several such transmitters sharing the same frequency in the same hemisphere, they are not precisely locked together, and TV sync signals are of short duration (though precisely repetitive), there could be problems. They'd be much more tractable than military radars, however.

A quick feasibility check would be to have an active moonbouncer see if they can detect UHF TV sync pulses off the Moon without special correlation. If they can, then using a correlator should enhance the signals markedly. Obvious note: the TV station should be over the moonbouncer's local horizon, else the direct signal would dominate. A station that is also on satellite so timing correlation is easily achieved for the sync pulses would be desirable. I'd suggest WTBS Ch 17 in Atlanta as a possible source for experimenters.

Gary

--

| | | | | |
|-----------------------------|--|--------------|--|--------------------------|
| Gary Coffman KE4ZV | | You make it, | | gatech!wa4mei!ke4zv!gary |
| Destructive Testing Systems | | we break it. | | emory!kd4nc!ke4zv!gary |
| 534 Shannon Way | | Guaranteed! | | gary@ke4zv.atl.ga.us |
| Lawrenceville, GA 30244 | | | | |

End of Ham-Space Digest V94 #314
